

Choose four questions from Part A and answer the question of Part B. It is suggested that you allocate approximately 30 minutes for each question. Good luck!

Part A

Question 1 (20%)

Assume an individual i with utility function $u_i(w) = 1 - \frac{1}{w+1}$ (w is i 's wealth, $w \geq 0$).

- Calculate i 's Arrow-Pratt measure of absolute risk aversion. What is i 's attitude to risk? Is i willing to tolerate more risk as (s)he gets wealthier?
- If i has no initial wealth, what is his/her risk premium for participating in a lottery that pays 3 with probability 0.4 or 1 with probability 0.6?
- Is an individual j with utility function $u_j(w) = -\frac{2}{w+1}$, $w \geq 0$ as risk averse as i ? Why (not)?
- If you knew that i 's utility level from some alternative A was 5 while his/her utility level from some alternative B was 10, what additional information would you have about i 's preferences as compared to the case where his/her utility function would be ordinal?

Question 2 (20%)

In an economy with 2 goods only, assume that the indirect utility function of some individual is $v(p, w) = \frac{w}{p_1} + \ln\left(\frac{p_1}{p_2}\right)$, $p_1 > 0$, $p_2 > 0$.

- Briefly explain what is expressed by the indirect utility function and the expenditure function of some individual.
- Find Walrasian demand for both goods and the expenditure function of this individual.
- Without finding the Hicksian demand function, calculate the level of Hicksian demand for both goods if $p_1=1$, $p_2=1$ and the utility aspiration level is $u=5$.
- Find the Hicksian demand function. Then, propose two different ways with which you could find the Slutsky matrix. Use either of them to write down the Slutsky matrix. Does it have the properties you expected? If we approached this economy by imposing rationality of choices courtesy of the weak axiom, would the Slutsky matrix have the same properties?

Question 3 (20%)

Individual i consumes only two goods: red apples and green apples. (S)he only cares about quantity (the more food, the better); hence, when (s)he faces two different consumption bundles, she will strongly prefer one bundle if it weighs more than the other, and regardless of how much of each colour they contain.

- Show that i 's preferences are rational.
- Show that i 's preferences are convex, but not strictly convex.
- Choose a random bundle $x \gg 0$ and indicate on a diagram all bundles y that i prefers strictly to x ($y \succ x$), all bundles z that i finds worse than x ($x \succ z$), and all bundles w for which $w \sim x$.
- Use the diagram you made in (c) to argue that i 's preferences are continuous, and propose a utility function that represents these preferences. Use this utility function to calculate i 's marginal rate of substitution. Could we infer the marginal rate of substitution without using the utility function?

Question 4 (20%)

In an economy with 3 goods, assume that in period 1, when the prices are $p_1=2$, $p_2=2$ and $p_3=3$, and consumer i 's wealth is $w=21$, the consumer chooses the consumption bundle $x_1=3$, $x_2=2$ and $x_3=3$.

- What modifications would you make if you wanted to make good 3 the numeraire commodity (i.e. $p_3=1$)? What assumption enables you to make these changes?
- Suppose that in period 2, the prices change to $p_1'=3$, $p_2'=1$ and $p_3'=2$, and i 's wealth is $w'=22$. In period 2, i chooses the consumption bundle $x_1'=4$, $x_2'=3$ and $x_3'=2$. Is i 's demand consistent with Walras' Law? Are i 's choices consistent with the weak axiom of revealed preference?
- What should i 's wealth be in period 2 if the change of prices was accompanied by a Slutsky wealth compensation?
- Explain (briefly) the difference between a Slutsky and a Hicksian wealth compensation, and illustrate with a diagram (assume 2 goods only).

Question 5 (20%)

Suppose an individual i with initial wealth w , who conforms to the vN-M axioms. This individual runs a risk p of losing x . An insurance company offers full insurance against this eventuality for a premium y (i.e. if the individual has bought full insurance, then the company will pay him/her the full amount x if the loss happens). This company also offers a program called "probabilistic insurance": in this program, the individual only pays a fraction r of y , $0 < r < 1$ (i.e. the individual only pays ry); if the loss occurs, there is a probability r that i is asked to pay the rest of the premium and then (s)he gets fully covered for the loss (as in the case of full insurance), and a probability $1-r$ that i gets his/her payment back, and (s)he does not get covered for the loss.

- Assume that i 's utility function is $u(\cdot)$, and that (s)he is indifferent between full insurance and non-insurance (i.e. doing nothing). Write down a condition that reflects this indifference.
- Show that if i is risk averse and (s)he is indifferent between full insurance and non-insurance, then (s)he must find probabilistic insurance at least as good as full insurance.
Hint: You might want to use that $u(w-ry)$ may equivalently be written as $u(r \cdot (w-y) + (1-r) \cdot w)$.
- What condition must hold for full insurance to be actuarially fair? Show that if full insurance is actuarially fair, then probabilistic insurance is also actuarially fair.
- Show that if full insurance is actuarially fair and the individual is risk averse, then (s)he must find full insurance at least as good as non-insurance.

Part B (20%)

Consider someone having to choose between several different alternatives. Instead of comparing the (expected) utilities of all alternatives and choosing the "best" (i.e. the option that maximises (expected) utility), this person just stops his/her exploration when (s)he finds an option that seems satisfactory enough. In other words, this person does not maximise utility, but instead, (s)he is happy enough with a utility level that is not necessarily the maximum that could be attained. Such behaviour is referred to as "satisficing" (as opposed to "maximising").

Is, in your opinion, "satisficing" a reasonable model of behaviour that ought to be proposed as an alternative to utility maximisation? How do you think that firm supporters of the mainstream theory would react to such a suggestion?

(Limit your answer to about 500 words).